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(54) Information transfer between radio telephone and portable memory element

(57) An information transfer system 120 , and associated method (700 in fig 7), for transferring information between a radio transceiver read-write memory 202 and a portable memory element 244 insertable into a card reader assembly 238 of the radiotelephone 100. An algorithm (800 - 830 in fig 8) executable by the processor cirquitry 184 of the radiotelephone 100 effectuates copying of information stored in the portable memory element 244 to the transceiver read-write memory 202 , or, alternately, copying of the information stored in the transceiver read-write memory 202 to the portable memory element 244.

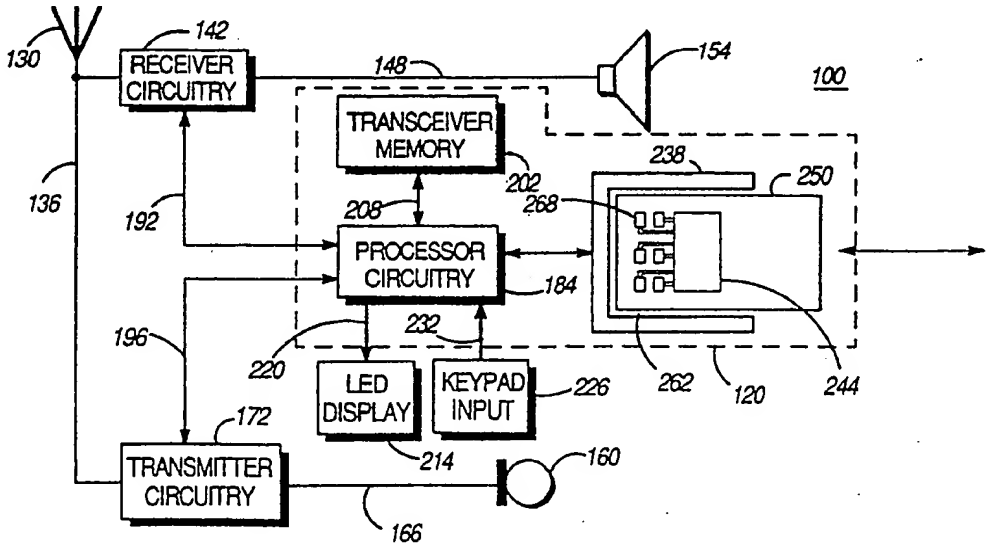

FIG.1

GB 2 270 442 A

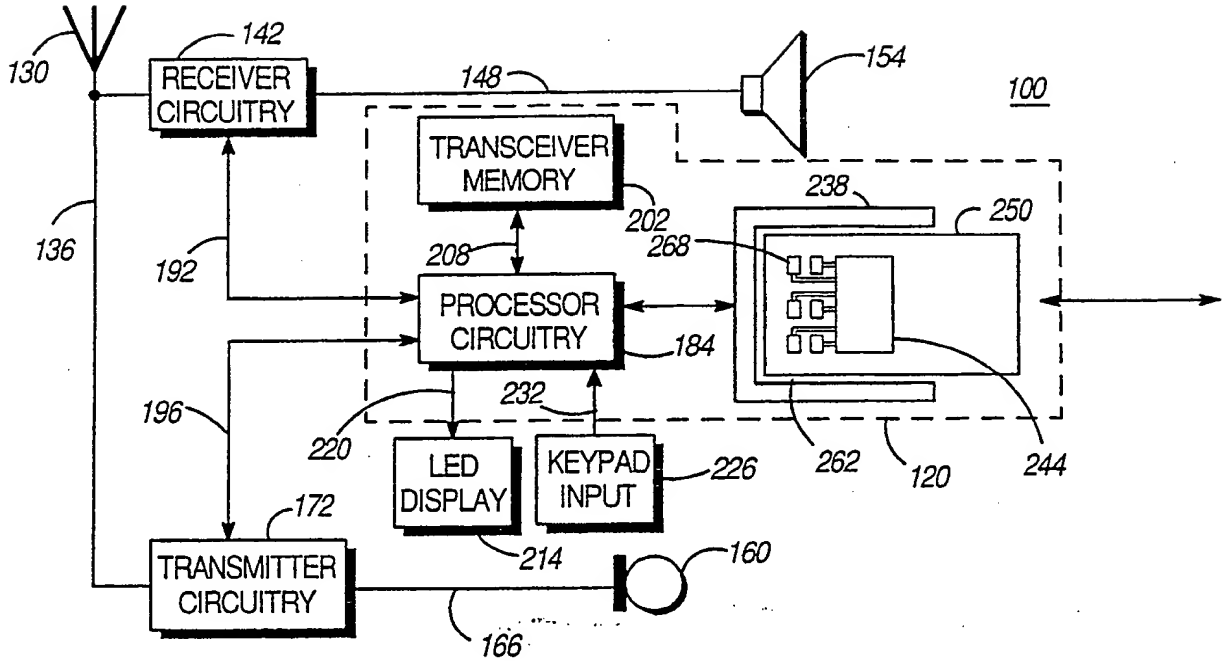
130
142
RECEIVER CIRCUITRY
148
154
100
TRANSCEIVER MEMORY
202
238
250
136
192
208
268
PROCESSOR CIRCUITRY
184
196
232
220
LED DISPLAY
KEYPAD INPUT
226
262
120
244
172
214
160
TRANSMITTER CIRCUITRY
166

FIG.1

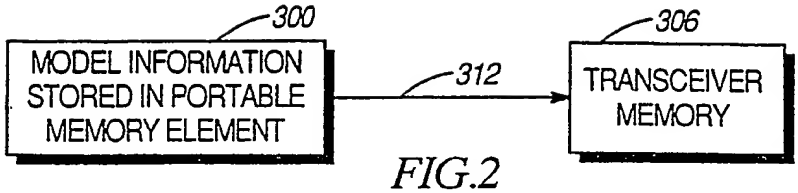

FIG.2

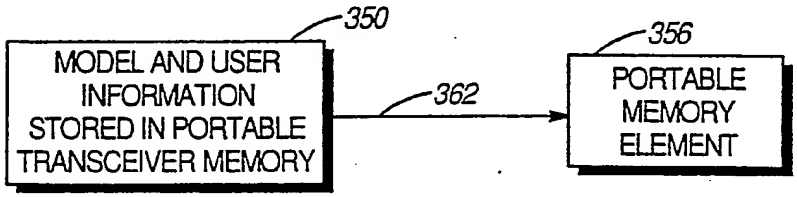

FIG.3

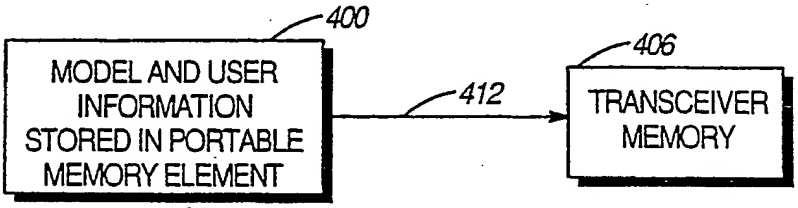

FIG.4

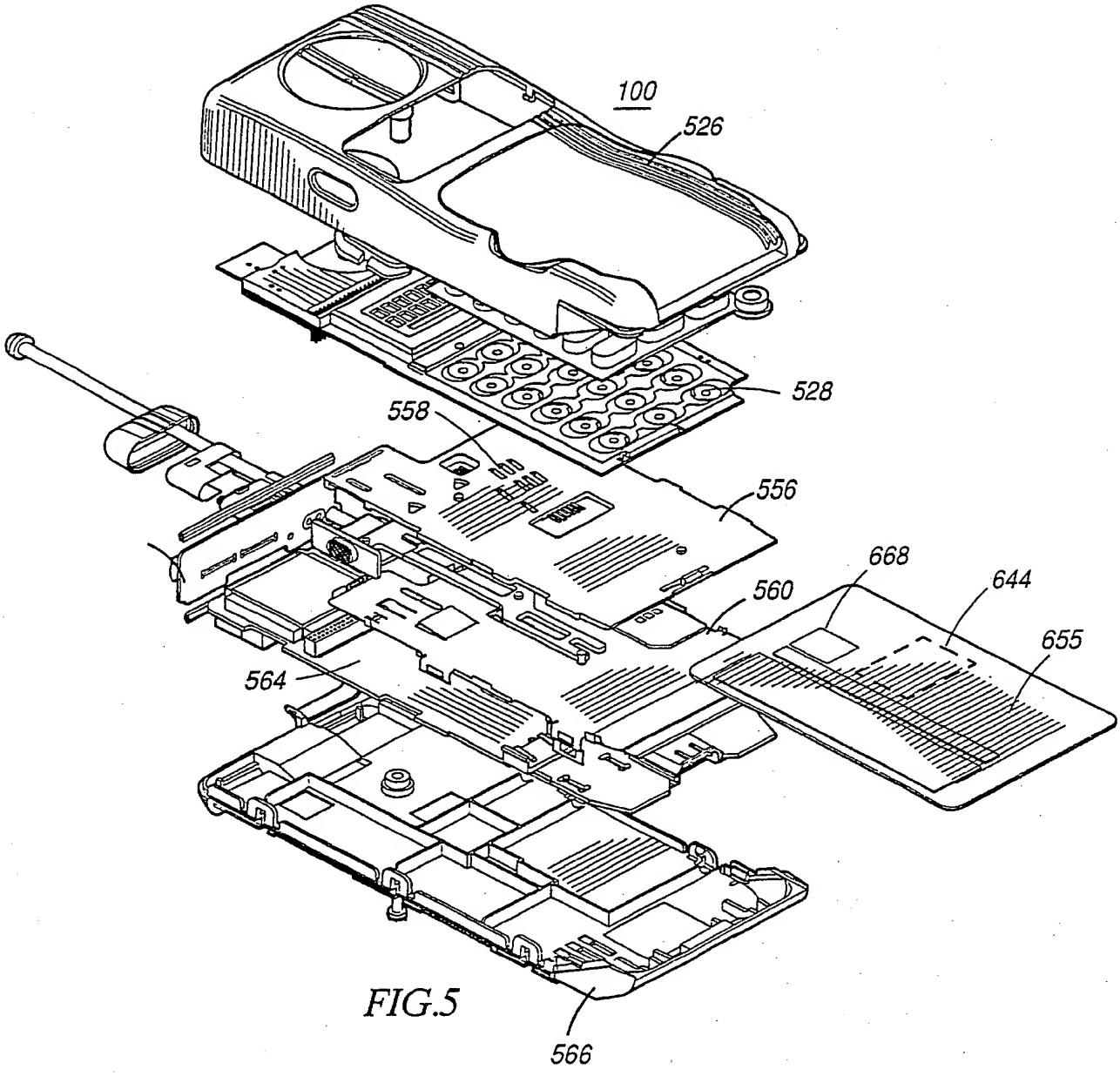

FIG.5

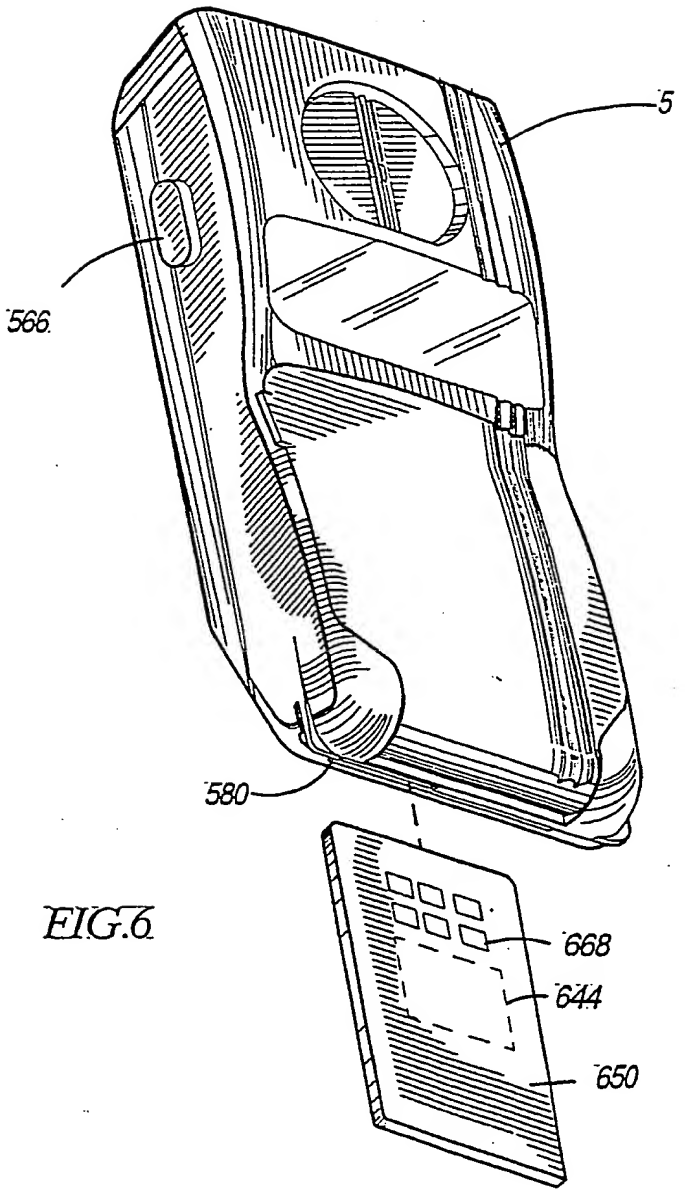

FIG.6

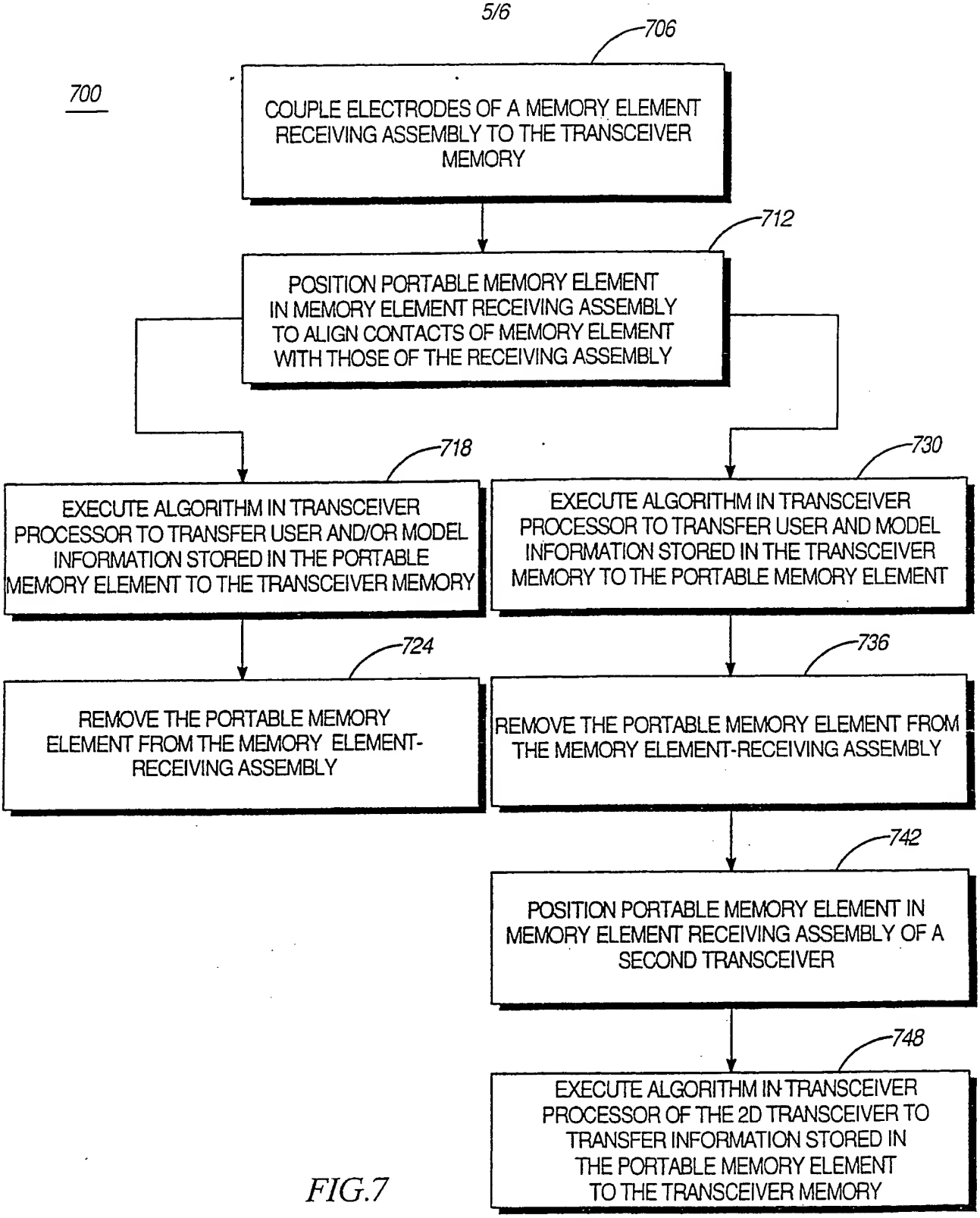
700
706
COUPLE ELECTRODES OF A MEMORY ELEMENT RECEIVING ASSEMBLY TO THE TRANSCEIVER MEMORY
712
POSITION PORTABLE MEMORY ELEMENT IN MEMORY ELEMENT RECEIVING ASSEMBLY TO ALIGN CONTACTS OF MEMORY ELEMENT WITH THOSE OF THE RECEIVING ASSEMBLY
718
EXECUTE ALGORITHM IN TRANSCEIVER PROCESSOR TO TRANSFER USER AND/OR MODEL INFORMATION STORED IN THE PORTABLE MEMORY ELEMENT TO THE TRANSCEIVER MEMORY
730
EXECUTE ALGORITHM IN TRANSCEIVER PROCESSOR TO TRANSFER USER AND MODEL INFORMATION STORED IN THE TRANSCEIVER MEMORY TO THE PORTABLE MEMORY ELEMENT
724
REMOVE THE PORTABLE MEMORY ELEMENT FROM THE MEMORY ELEMENT-RECEIVING ASSEMBLY
736
REMOVE THE PORTABLE MEMORY ELEMENT FROM THE MEMORY ELEMENT-RECEIVING ASSEMBLY
742
POSITION PORTABLE MEMORY ELEMENT IN MEMORY ELEMENT RECEIVING ASSEMBLY OF A SECOND TRANSCEIVER
748
EXECUTE ALGORITHM IN TRANSCEIVER PROCESSOR OF THE 2D TRANSCEIVER TO TRANSFER INFORMATION STORED IN THE PORTABLE MEMORY ELEMENT TO THE TRANSCEIVER MEMORY

FIG.7

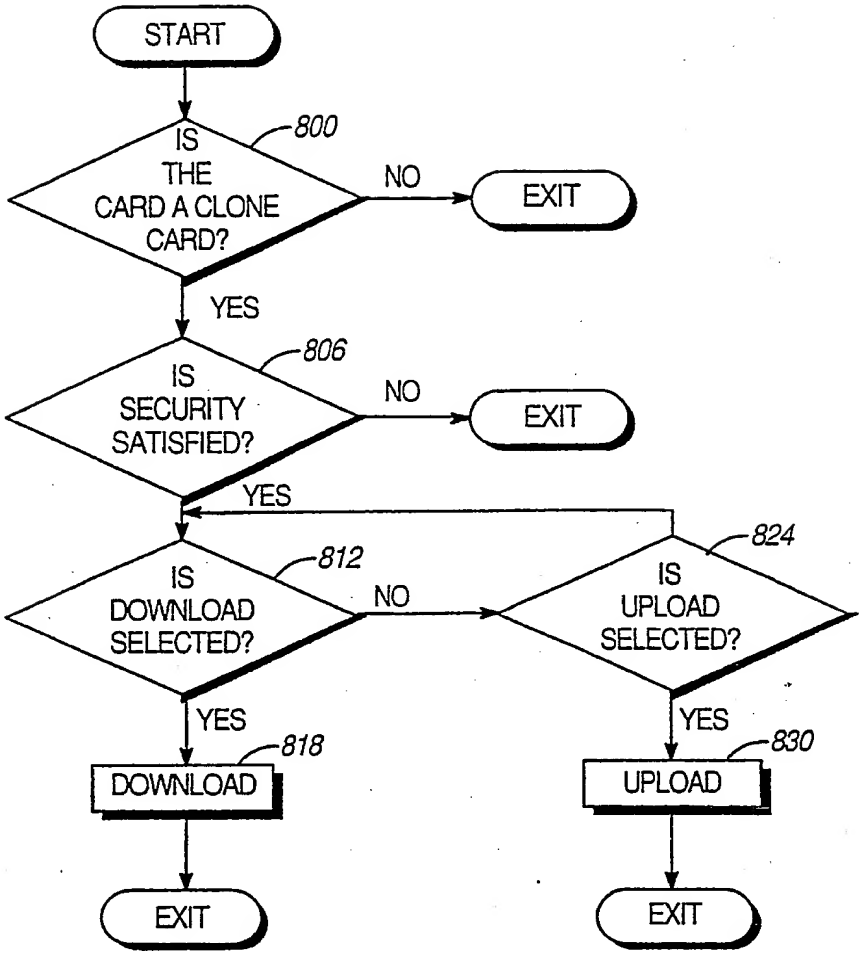
START
IS THE CARD A CLONE CARD?
800
NO
EXIT
YES
IS SECURITY SATISFIED?
806
NO
EXIT
YES
IS DOWNLOAD SELECTED?
812
NO
IS UPLOAD SELECTED?
824
YES
DOWNLOAD
818
YES
UPLOAD
830
EXIT
EXIT

FIG.8

SYSTEM AND METHOD FOR TRANSFERRING INFORMATION BETWEEN A RADIO TRANSCEIVER AND A PORTABLE MEMORY ELEMENT

Background of the Invention

The present invention relates generally to techniques for transferring stored information, and, more particularly, to a system and associated method for transferring information between a radio transceiver memory and a portable memory element.

A communication system is operative to transmit information between two or more locations, and includes, at a minimum, a transmitter and a receiver interconnected by a communication channel. A radio communications system is a communication system wherein the communication channel interconnecting the transmitter and the receiver comprises a radio frequency channel. A radio frequency channel is defined by a range of frequencies of the communication spectrum.

A transmitter which forms a component portion of a radio communication system includes circuitry for converting the information to be transmitted therefrom into a form suitable for transmission upon the radio frequency channel. Such circuitry includes modulation circuitry which performs a process referred to as modulation. In such a process, the information which is to be transmitted is impressed upon a radio frequency electromagnetic wave, commonly referred to as a carrier signal. The resultant signal, formed of a combination of the carrier signal and the information, is commonly referred to as a modulated signal. Such modulated signal is also sometimes referred to as the communication signal as the modulated signal includes the information which is to be communicated between the transmitter and the receiver.

Various modulation techniques are utilized to modulate the information upon the carrier signal to form thereby the communication signal. Amplitude modulation, frequency modulation, and phase modulation are all modulation techniques by which information may be impressed upon a carrier wave to form the communication signal.

A significant advantage of a radio communication system is that no physical interconnection is required between the transmitter and the receiver of such a system; also, the modulated signal may be transmitted upon the radio frequency channel over large distances.

Numerous modulated signals may be simultaneously transmitted upon different radio frequency channels defined upon various frequency bands of the electromagnetic frequency spectrum. Transmission of communication signals on frequency channels defined upon the various frequency bands of the electromagnetic spectrum is regulated by regulatory bodies.

A two-way, radio communication system is a radio communication system, similar to the radio communication system above-described, but which permits both transmission from a location and reception at such location of modulated signals. Each location of such two-way radio communication system contains both a transmitter and a receiver. The transmitter and the receiver positioned at a single location typically comprise a unit referred as a radio transceiver, or, more simply, a transceiver.

A two-way, radio communication systems which permits alternate transmission and reception of modulated signals is referred to as a simplex, radio communication system. A two-way, radio communication system which permits simultaneous transmission and reception of modulated signals is referred to as a duplex, radio communication system.

A cellular communication system is one type of two-way radio communication system in which communication is permitted with a radio transceiver positioned at any location within a geographic area encompassed by the cellular communication system.

A cellular communication system is created by positioning a plurality of fixed-site radio transceivers, referred to as base stations, at spaced-apart locations throughout the geographic area. The base stations are connected to a conventional, wireline telephonic network. Associated with each base station of the plurality of base stations is a portion of the geographic area encompassed by the cellular communication system. Such portions are referred to as cells. Each of the plurality of cells is defined by one of the base stations of the plurality of base stations, and the plurality of cells together define the coverage area of the cellular communication system.

A radio transceiver, referred to in a cellular communication system as a cellular radiotelephone or, more simply, a cellular phone, positioned at any location within the coverage area of the cellular communication system, is able to communicate with a user of the conventional, wireline, telephonic network by way of a base station. Modulated signals generated by the radiotelephone are transmitted to a base station, and modulated signals generated by the base station are transmitted to the radiotelephone, thereby to effectuate two-way communication therebetween. (A signal received by a base station is then transmitted to a desired location of a conventional, wireline network by conventional telephony techniques. And, signals generated at a location of the wireline network is transmitted to a base station by conventional telephony techniques, thereafter to be transmitted to the radiotelephone by the base station.)

New designs of radiotelephones operative in a cellular communication system include new innovations which increase the convenience of use of such radiotelephones. An assembly referred to as a card reader assembly constitutes one such innovation included in the designs of several new constructions of radiotelephones.

A card reader assembly comprises structure forming a receiving platform and electrodes positioned in proximity to the receiving platform. The electrodes are also coupled to other structure of the radiotelephone (namely, processor circuitry of the

radiotelephone) and are operative to form an electrical connection with corresponding electrodes of a memory element when such memory element is positioned at the receiving platform of the card reader assembly.

Conventionally, identification indicia, including an identification number to be utilized for billing purposes to bill a phone call made with the radiotelephone to a particular billing account, is stored in such portable memory element.

The memory element is typically disposed upon a card member of a standardized configuration (the receiving platform and the electrodes of the card reader assembly are similarly of a standardized configuration) and the electrodes of the memory element are disposed upon a face surface of such card member. The card member oftentimes includes some type of processor-like circuitry which functions, inter alia, to control access to the memory elements. In such instances, the electrodes disposed upon the face surface of the card member may be coupled to the memory element by way of such processor-like circuitry.

The card member is operative not only to support the memory element and the electrodes, but also to align the electrodes of the memory element with the electrodes of the card reader assembly when the card member is positioned at the receiving platform.

When the electrodes are suitably aligned with one another, thereby to connect the memory element with the circuitry of the radiotelephone, the information stored within the memory element may be transferred to the circuitry of the radiotelephone.

Because the card member may be removed from the card reader assembly of one radiotelephone, and inserted within the card reader assembly of another radiotelephone, calls made from more than one radiotelephone may be billed to a single billing account.

Radiotelephone constructions having card reader assemblies incorporated therein are advantageous as a user of more than one radiotelephone may alternately operate the two or more radiotelephones while requiring only a single billing account.

While such memory elements removably insertable into the card reader assemblies of such radiotelephones have heretofore been primarily utilized solely to transfer such identification indicia to the radiotelephone, no structural limitation prevents storage of other information in such memory elements for transfer of such other information to the radiotelephone.

Much of the operation of a radiotelephone occurs as a result of execution of algorithms contained in processor circuitry of the radiotelephone. Such algorithms, stored in memory of the radiotelephone, not only permit operation of the radiotelephone, but, additionally, define features of the radiotelephone which aid in the convenience of use of the radiotelephone.

Such features oftentimes are used to distinguish between different model series of radiotelephones. That is to say, a single manufacturer of radiotelephones may market a series of different models of radiotelephones wherein the physical structures of the radiotelephones of several series of models are substantially identical. The different model series of radiotelephones, however, incorporate dissimilar algorithms stored in the radiotelephone memories of the radiotelephones of the different models. Different model series of radiotelephones have algorithms defining different features. The software features of the radiotelephone thereby are used to distinguish between different ones of the model series. A more expensive model series of radiotelephone, although physically identical to that of a less expensive model series, contains algorithms defining additional features which are not defined in the algorithms of the less expensive model series.

The algorithms of a radiotelephone which permit operation of the radiotelephone and which define features of the radiotelephone shall hereinafter be referred to as "model information."

Because the different models of radiotelephones may be comprised of substantially identical physical structure, an owner of a radiotelephone having a relatively few number of features defined to be operable with such radiotelephone may "upgrade" such

radiotelephone by installing into the radiotelephone memory algorithms which define additional features.

Heretofore, such an upgrade has been effectuated either by exchanging the entire radiotelephone for a separate radiotelephone having algorithms stored therein which define additional features, or, alternately, by copying into the radiotelephone algorithms which define such additional features.

This second-noted process may be effectuated by interconnecting the radiotelephone which is to be upgraded with a radiotelephone having the algorithms defining the additional features by way of electrical cables. The algorithms defining the additional features may then be copied into the radiotelephone which is to be upgraded.

Many constructions of radiotelephones also permit the user to install into the memory of the radiotelephone certain information. For instance, some constructions of radiotelephones permit the user to install frequently-dialed telephone numbers into the radiotelephone memory to permit thereafter speed-dialing of such telephone numbers, once stored in the radiotelephone memory. Information which the user of the radiotelephone is permitted permitted to enter into the radiotelephone memory shall hereinafter be referred to as "user information."

In the event that the physical structure of the radiotelephone becomes damaged to render inoperable the radiotelephone, the owner of the radiotelephone typically exchanges the damaged radiotelephone for a new radiotelephone in good repair. In most instances, the memory of the damaged radiotelephone is accessible, and the contents of such memory, including both the model information and the user information, may be transferred to the radiotelephone in good repair. By way of a procedure similar to the procedure described above, transfer of the contents of the damaged radiotelephone to the radiotelephone of good repair has been effectuated by way of a cable interconnecting the two radiotelephones.

Additionally, when installing the model information into a newly-constructed radiotelephone (or a radiotelephone in which the model information must otherwise be installed), a procedure also similar to the aforementioned procedure of interconnecting two radiotelephones by way of a cable is utilized. A radiotelephone having the desired model information stored therein, the "master" radiotelephone, is connected to the radiotelephone to which the model information is to be copied, and such copying of the model information is effectuated.

Such positioning of two radiotelephones to be interconnected by a cable may, at times, be undesirable or impractically-expensive as an inventory of radiotelephones may be required of different radiotelephones having the different algorithms stored therein to permit transfer of model or user information there between.

What is needed, therefore, is a technique by which information may be transferred between radiotelephones easily and inexpensively.

Summary of the Invention

The present invention, accordingly, provides a system and associated method for transferring information between radiotelephones.

The present invention includes further advantages and features, the details of which will become more apparent when reading the detailed description of the preferred embodiments hereinbelow.

In accordance with the present invention, an information transfer system and an associated method, for transferring at least one of either user information or model information utilized during operation of a radio transceiver is disclosed. The radio transceiver has transceiver circuitry including processor circuitry and transceiver read-write memory for storing the user and model information therein. A memory element-receiving assembly is

carried by the radio transceiver. The receiving assembly has a receiving platform defining a support position therealong at which electrodes coupled to access the transceiver read-write memory are supported proximate thereto. A portable memory element is of dimensions permitting removable positioning thereof at the support position defined along the receiving platform of the memory element-receiving assembly. The portable memory element has electrical contacts coupled thereto which correspond to the electrodes of the memory element-receiving assembly such that, when the portable memory element is positioned at the support position, the electrical contacts of the portable memory element engage with the electrodes of the memory element-receiving assembly, thereby to permit access by the portable read-write memory element with the transceiver memory. An algorithm is embodied in the processor circuitry of the radio transceiver which is operative, when executed, to copy at least either the user information or the model information stored in the portable memory element to the transceiver read-write memory.

Brief Description of the Drawings

The present invention will be better understood when read in light of the accompanying drawings in which:

FIG. 1 is a partial-block, partial-schematic diagram of a radio transceiver of which the elements of the system of the preferred embodiment of the present invention form a portion;

FIG. 2 is a block diagram representing transfer of information which may be effectuated during operation of the system and method of the preferred embodiment of the present invention;

FIG. 3 is a block diagram similar to that of FIG. 2, and which also represents transfer of information which may be effectuated during operation of the system and method of the preferred embodiment of the present invention;

FIG. 4 is a block diagram similar to those of FIGS 2 and 3, and which also represents transfer of information which may be

effectuated during operation of the system and method of the preferred embodiment of the present invention;

FIG. 5 is an exploded, perspective view of the radiotelephone shown in the partial-block, partial-schematic diagram of FIG. 1;

FIG. 6 is a schematic representation of the radiotelephone shown in the exploded view of FIG. 5;

FIG. 7 is a flow diagram listing the method steps of the method of the preferred embodiment of the present invention; and

FIG. 8 is a flow diagram of an algorithm used in the preferred embodiment of the present invention to transfer information between a radiotelephone memory and a portable memory element.

Description of the Preferred Embodiment

Referring first to the partial-block, partial-schematic diagram of FIG. 1, a radio transceiver, referred to generally by reference numeral 100, is shown. Radio transceiver 100 includes the system, represented by block 120, shown in hatch, of the preferred embodiment of the preferred embodiment of the present invention. System 120 of the preferred embodiment includes the elements illustrated within block 120.

As is conventional, radio transceiver 100 includes both transmitter circuitry, represented by the elements shown in the bottom portion of the figure, and receiver circuitry, represented by the elements shown in the top portion of the figure. In conventional operation, a signal transmitted to radio transceiver 100 is detected by antenna 130 which converts the received, electromagnetic signal into an electrical signal on line 136. Line 136 is connected to receiver circuitry 142 which is operative to down-convert and demodulate the signal applied thereto on line 136 and to generate a demodulated signal on line 148 which is coupled to a transducer, here speaker 154.

In conventional operation of the transmitter portion of radio transceiver 100, a transducer, here microphone 160, is operative to convert information, here a voice signal, into a electrical signal on

line 166. Line 166 is coupled to transmitter circuitry 172 which is operative to modulate and up-convert the signal applied thereto on line 166, thereby to generate a modulated signal on line 178 of a transmission frequency to be transmitted by antenna 130 by way of connection of line 178 with line 136.

As mentioned previously, many radio transceivers, such as a cellular radiotelephone operative in a cellular communication system are operative to execute algorithms embodied therein, and stored in transceiver memory. Accordingly, radio transceiver 100 is further shown to include processor circuitry 184. Processor circuitry 184 is coupled to receiver circuitry 142 and transmitter circuitry 172 by way of lines 192 and 196, respectively. Processor circuitry 184 is further shown to be connected to transceiver memory 202 by way of line 208, to light emitting diode (LED) display 214 by way of line 220, and to keypad input 226 by way of line 232.

During operation of radio transceiver 100, processor circuitry 184 retrieves algorithms stored in transceiver memory 202, executes such algorithms, and generates output signals responsive to operation of such algorithms on lines 192, 196, and 220, as appropriate. In some instances, an externally-applied actuation signal generated by way of actuation of one or more keypad push buttons of keypad 226 cause initiation of execution of such algorithms by processor circuitry 184.

As also mentioned previously, many new radiotelephone constructions operative in a cellular communication system include a card reader assembly for receiving a portable memory element, typically disposed upon a card member. Accordingly, radio transceiver 100 is further shown to include card reader assembly 238 of dimensions permitting removable insertion of memory element 244 disposed upon card member 250 therein. Card reader 238 defines receiving platform 256 permitting sliding translation of card member 250 therealong to position card member 250 at a support location indicated by reference numeral 262, defined along receiving platform 256.

When card member 250 is positioned at support location 262, electrodes, here designated by blocks 268 disposed upon a face surface of card member 250 and coupled to memory element 244, engage with corresponding electrodes (hidden from view in FIG. 1) of card reader 238. (As noted previously, processor-like circuitry may also be disposed upon card member 250; in such instances, electrodes 268 are coupled to memory element 244 by way of such processor-like circuitry.) The electrodes of card reader assembly 238 are coupled to processor circuitry 184 by way of line 274. When card member 250 is suitably positioned at support location 262, memory element 244 is thereby connected to processor circuitry 184, and, hence, also coupled to transceiver memory 202 by virtue of connection of processor circuitry 184 with transceiver memory 202 by way of line 208.

While, conventionally, identification indicia is stored in memory element 244 to be operative for purposes discussed previously, no structural limitation prevents storage of other types of information in memory element 244.

Turning next to the block diagram of FIG. 2, transfer of information which may be effectuated during operation of the system and method of the preferred embodiment of the present invention is shown. More particularly, block 300 of FIG 2 represents information stored in a portable memory element, such as memory element 244 disposed upon card member 250 of FIG. 1, and block 306 represents a transceiver read-write memory, such as transceiver memory 202 of FIG. 1. Arrow 312 extending from block 300 to block 306 represents the transfer of information stored in a portable memory element to the transceiver read-write memory.

Transfer of information from the portable memory element to the transceiver read-write memory is referred to hereinafter as "uploading" of information, and transfer of information from the transceiver read-write memory to the portable memory element is referred to hereinafter as "downloading" of information.

As mentioned previously, when an owner of a radiotelephone wishes to upgrade the radiotelephone to increase the number of

features executable by such radiotelephone, appropriate addition to the algorithms stored in the radiotelephone memory (there to be executable by the processor circuitry of such radiotelephone) is made. By storing model information of various model series of radiotelephones on various portable memory elements similar to memory element 244 FIG. 1, such additions to the algorithms to permit the desired upgrade of the radiotelephone may be easily implemented.

Block 300 of FIG. 2 represents model information stored on such portable memory element. With reference to radio transceiver 100, insertion of card member 250, having memory element 244 in which such model information is stored, into card reader assembly 238 to position the card member 250 at support location 262 interconnects memory element 244 with processor circuitry 184. Because processor circuitry 184 is connected by way of line 208 with transceiver memory 202, an algorithm may be executed by processor circuitry 184 to copy the information stored in memory element 244 into transceiver memory 202. Such model information may either be written over existing information stored in transceiver memory 202 or may be stored in additional storage locations of transceiver memory 202.

When memory element 244 disposed upon card member 250 is utilized solely to transfer model information from memory element 244 to transceiver memory 202, memory element 244 is preferably comprised of a read-only memory, thereby to prevent inadvertant overwriting of the information stored in memory element 244.

Once the information has been copied from memory element 244 to transceiver memory 202, card member 250 may be removed from card reader assembly 238 and such process may be repeated to upgrade different radiotelephones as desired by performing a similar such process.

FIG. 3 is a block diagram, similar with that of FIG. 2, but which represents transfer of other types of information during operation of the system and method of the preferred embodiment of

the present invention. Here, block 350 represents both model information and user information stored in a radiotelephone memory such as transceiver memory 202 of radio transceiver 100 of FIG. 1. And, block 356 represents a portable memory element, here comprised of a read-write memory, such as memory element 244 disposed upon card member 250 of FIG. 1. Arrow 362 extending from block 350 to block 356 is representative of downloading of information from the radiotelephone memory to the portable memory element.

As also mentioned previously, when a radio transceiver is physically damaged to be inoperable but the transceiver memory thereof is accessible, the model information and the user information stored in the radiotelephone memory is copied into a radiotelephone of good repair. According to the system and the method of the preferred embodiment of the present invention, in such a situation, the model information and user information stored in the radiotelephone memory of the damaged radio is first copied into the memory of the portable memory element.

With reference again to FIG. 1, in such a procedure, an algorithm is executed by processor circuitry 184 to copy the model and user information stored in transceiver memory 202 into memory element 244 disposed upon card member 250. Once such information has been copied into memory element 244, card member 250 is removed from card reader assembly 238. Such information stored in memory element 244 may then be copied into a radiotelephone of good repair thereafter by inserting the card member 250 having such portable memory element into the radiotelephone of good repair.

FIG. 4 is a block diagram to those of FIGS. 2 and 3 but which illustrates the transfer of both model information and user information stored in a portable memory element, represented by block 400, into a radiotelephone memory, here represented by block 406. Arrow 412 extending from block 400 to block 406 represents the transfer of such information from the portable memory element to the radiotelephone memory.

With reference once again to FIG. 1, once the model information and user information has been copied from the damaged radiotelephone to the portable memory element disposed upon card member 250 and card member 250 has been removed from the damaged radiotelephone, the card member 250 is thereafter inserted into the card reader assembly, again such as card reader assembly 238 of radio transceiver 100, of a radiotelephone of good repair. Once inserted into the card reader assembly 238 of the radiotelephone of good repair, an algorithm embodied in the processor circuitry 184 of the radiotelephone of good repair may be executed to copy the model information and user information stored in memory element 244 into transceiver memory 202 of the radiotelephone of good repair. Once such transfer of information has been effectuated, the radiotelephone of good repair becomes a working replica of the radiotelephone from which the model information and user information has been copied.

Because such system of transferring information utilizes a card reader assembly forming a portion of the radiotelephone, the existing structure of such radiotelephone is utilized. And, because the information is transferred to the portable memory element, and the portable memory element is transferred between the failed radiotelephone and the radiotelephone of good repair, the need to interconnect two radiotelephones by way of a cable is obviated. In fact, the two radiotelephones need not even be positioned in physical proximity with one another.

It should be noted that in situations in which a failed radio is inoperable even to transfer model information and user information from the failed radio to the portable memory element, a procedure such as that discussed with respect to FIG. 2 above may be implemented to transfer model information into a radiotelephone of good repair. (The user information stored in the failed radio in such situation would not be recoverable in such a scenario.)

Turning next to the exploded, perspective view of FIG. 5, radio transceiver 100 of FIG. 1, here forming a portable radiotelephone operable in a cellular communication system, is illustrated. Radio

transceiver 100 is here shown to include front housing 506, keypad 526 (which corresponds to keypad 226 of the block diagram of FIG.1), keypad circuit board 528 a card reader assembly including receiving platform 556 having electrodes 558 formed thereupon and cover plate 560. The radiotelephone comprising radio transceiver 100 of FIG. 5 is further shown to include circuit board 564 upon which transceiver circuitry including receiver circuitry and transmitter circuitry (corresponding to receiver circuitry and transmitter circuitry blocks 142 and 172 of FIG. 1) is disposed and rear housing 566.

Portable memory element 644 is disposed upon card member 650 having electrodes 668 disposed upon a face surface thereof. Electrode 668 disposed upon a face surface of card member 650 correspond in number and position with electrodes 558 formed upon receiving platform 556.

FIG. 6 is a perspective view of the radiotelephone comprising radio transceiver 100 of FIG. 5 shown in the exploded view of FIG. 5. Front and rear housing portions 526 and 566 are shown in mated engagement to supportively enclose the structure of the radiotelephone comprising radio transceiver 100 therewithin. The perspective view of FIG. 6 further illustrates slotted opening 580 of dimensions permitting insertion of card member 650 therewithin.

When card member 650 is inserted into slotted opening 580 and translated along receiving platform (shown in FIG. 5) to position the card member 650 at the support location defined therealong, electrodes 668 disposed upon the face surface of card member 650 align and engage with corresponding electrodes of the card reader assembly supported within the housing portions 506 and 566 of the radiotelephone comprising transceiver 100.

Once positioned thereat, an algorithm may be executed by processor circuitry of the radiotelephone to transfer information from memory element 644 to transceiver read-write memory housed within the housing of the radiotelephone, or, alternately, to copy information from the transceiver read-write memory to the memory element 644 disposed upon card member 650.

It should be noted that in the preferred embodiment of the present invention, an identification code is stored in memory element 644 to identify card member 650 to be a "clone" card member permitting copying of information stored in memory element 644 into the radio transceiver memory or vice versa. Once the presence of such type of card is indicated, a user of the radiotelephone actuates a desired sequence of keypad pushbuttons to cause copying of information between memory element 644 and the radio transceiver memory.

Turning next to the flow diagram of FIG. 7, the method steps of the method, referred to generally by reference numeral 700, of the preferred embodiment of the present invention are listed. The method of the preferred embodiment of the present invention transfers information utilized during operation of a radio transceiver having transceiver circuitry including processor circuitry and transceiver read-write memory for storing the information therein.

First, and as represented by block 706, electrodes of a memory element-receiving assembly carried by the radio transceiver and having a receiving platform defining a support position therealong are coupled to the transceiver memory.

Next, and as represented by block 712, a portable memory element is positioned at the support position defined along the receiving platform of the memory element-receiving assembly to align electrical contacts of the portable memory element with the electrodes of the memory element-receiving assembly thereby to permit access of the portable memory element with the transceiver read-write memory.

Next, and as represented by block 718, an algorithm embodied in the processor circuitry of the radio transceiver operative to transfer user and/or model information stored in the portable memory element to the transceiver read-write memory is executed.

In a further embodiment of the present invention, method 700 comprises the further step of removing, represented by block 724, the portable memory element from the support position after the

algorithm embodied in the processor circuitry of the radio transceiver to transfer the information stored in the portable memory element to the transceiver read-write memory has been executed.

In the preferred embodiment of the present invention the method 700 also comprises the further alternate step, represented by block 730, of executing an algorithm embodied in the processor circuitry of the radio transceiver to copy user information stored in the transceiver read-write memory to the portable memory element. Then, and as represented by block 736, method 700 further includes the steps of: removing the portable memory element from the support location, then, as represented by block 742, positioning the portable memory element at the support position of a memory element-receiving assembly of a second radio transceiver and then, as represented by block 748, executing an algorithm in the processor circuitry of the second radio transceiver to transfer the information stored in the portable memory element to the transceiver read-write memory of the second radio transceiver.

Finally turning now to the logical flow diagram of FIG. 8, an algorithm executable by processor circuitry of a radio transceiver for transferring information between the transceiver read-write memory and a portable memory element is shown. First, after insertion of the portable memory element disposed upon a card member into the card receiving assembly of the radio transceiver, a determination is made as to whether the card member is a "clone card," represented by decision block 800. If so, the yes branch is taken to decision block 806 and a determination is made as to whether security is satisfied (i.e., as a determination is made as to whether the identification information stored in the portable memory element meets predefined parameters). If so the yes branch is taken to decision block 812.

The no branches extending from decision blocks 800 and 806 cause termination of the algorithm.

If the yes branch has been taken from decision block 806 to decision block 812, a determination is made as to whether a download algorithm is to be executed. In the preferred embodiment, such a

selection is made by manual actuation of a pre-selected sequence of keypad pushbuttons. If such a selection had been made, the yes branch is taken, a download of the information of the transceiver memory is effectuated, as represented by block 818, and the algorithm is terminated.

If no download selection is made, the no branch is taken to decision block 824 whereat a determination is made as to whether an upload selection had been made. Again, such selection in the preferred embodiment is effectuated by actuation of a desired sequence of keypad pushbuttons. If such a selection has been made, an uploading of information stored in the portable memory element to the transceiver read-write memory is effectuated and the algorithm is terminated. If neither downloading or uploading has been selected, the algorithm continues such repeated queries until the card member is removed from the card reader assembly.

While the present invention has been described in connection with the preferred embodiments shown in the various figures, it is to be understood that other similar embodiments may be used and modifications and additions may be made to the described embodiments for performing the same function of the present invention without deviating therefrom. Therefore, the present invention should not be limited to any single embodiment, but rather construed in breadth and scope in accordance with the recitation of the appended claims.

Claims

1. An information transfer system for copying at least one of either user information or model information utilized during operation of a radio transceiver having transceiver circuitry including processor circuitry and transceiver read-write memory, said information transfer system comprising:

a memory element-receiving assembly carried by the radio transceiver and having a receiving platform defining a support position therealong at which electrodes coupled to access the transceiver read-write memory are supported proximate thereto;

a portable memory element of dimensions permitting removeable positioning thereof at the support position defined along the receiving platform of the memory element-receiving assembly, said portable memory element having electrical contacts coupled thereto corresponding to the electrodes of the memory element-receiving assembly, thereby to permit access of the portable memory element with the transceiver read-write memory; and

an algorithm embodied in the processor circuitry of the radio transceiver operative, when executed, to copy at least either the user information or the model information, when stored in the portable memory element, into the transceiver read-write memory.

2. The information transfer system of claim 1 wherein the electrodes of the memory element-receiving assembly are connected to the processor circuitry of the radio transceiver, and the processor circuitry of the radio transceiver is connected to the transceiver read-write memory thereby to couple the electrodes of the memory element-receiving assembly to access the transceiver read-write memory by way of the processor circuitry.

3. The information transfer system of claim 1 wherein the portable memory element is disposed upon a card member of dimensions permitting sliding translation of the card member along the receiving platform to position the portable memory element at the support position thereby.

4. The information transfer system of claim 1 further comprising actuation means for initiating execution of the algorithm embodied in the processor circuitry of the radio transceiver.

5. The information transfer system of claim 1 wherein said portable memory element comprises a read-write memory.

6. The information transfer system of claim 5 wherein said algorithm embodied in the processor circuitry of the radio transceiver is further alternately operative, when executed, to copy at least one of either the user information or the model information stored in the transceiver read-write memory to the read-write memory comprising the portable memory element.

7. The information transfer system of claim 6 further comprising actuation means for initiating execution alternately of the algorithm embodied in the processor circuitry for copying user information stored in the portable memory element to the transceiver read-write memory or for initiating execution of the algorithm embodied in the processor circuitry for copying user information stored in the portable memory element to the transceiver read-write memory.

8. The information transfer system of claim 7 wherein said actuation means comprises keypad actuation switches of a telephonic keypad of the radio transceiver.

9. The information transfer system of claim 8 wherein said algorithm embodied in the processor circuitry is operative alternately to copy both the model information stored in the portable memory element into the transceiver read-write memory, or to copy both the model information and the user information stored in the transceiver read-write memory into the portable memory element.

10. The information transfer system of claim 1 wherein said algorithm embodied in the processor circuitry is operative to copy both the model information stored in the portable memory element into the transceiver read-write memory.

Patents Act 1977 Examiner's report to the Comptroller under Section 17 (The Search report)	Application number GB 9316795.5
Relevant Technical Fields (i) UK Cl (Ed.L) H4K (KY4M, KY4M12, KYX, KBNJ) H3Q (QBMX) (ii) Int Cl (Ed.5) H04Q (7/04) H04M (1/274, 1/276, 1/66)	Search Examiner MR S J L REES Date of completion of Search 3 November 1993
Databases (see below) (i) UK Patent Office collections of GB, EP, WO and US patent specifications. (ii) ONLINE DATABASE: WPI	Documents considered relevant following a search in respect of Claims :- 1-10

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Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2241133 A	(MOTOROLA) - whole document especially line 28 page 7 to line 15 page 8	1,3,5
X	EP 0378775 A2	(STORNO) - summary and lines 37-55 of column 2	1-7
X	EP 0369110 A2 = DE 3838677	(BOSCH) - see Figure 1 and WPI Abstract Accession number 90-157065/21	1 at least

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